What is claimed is:

1. A thermal sensor to sense a temperature comprising:

an oscillator circuit to generate a first oscillating signal and a second oscillating signal; and

one or more counter circuits to perform a first count on said first oscillating signal and a second count on said second oscillating signal, wherein said counter circuit halts said second count when said first count reaches a predetermined value and upon said first count reaching said predetermined value said counter circuit asserts a value of said second count to indicate a response of said thermal sensor.

2. The thermal sensor of claim 1, wherein said oscillator circuit comprises,

a reference oscillator circuit to generate said first oscillating signal that oscillates at a frequency substantially independent of temperature; and

a temperature dependent oscillator circuit to generate said second oscillating signal that oscillates at a frequency dependent on said sensed temperature.

3. The thermal sensor of claim 2, wherein said reference oscillator circuit comprises,

a temperature independent voltage source; and

a voltage controlled oscillator (VCO), wherein said VCO generates said first oscillating signal based on a temperature independent voltage value asserted by said temperature independent voltage source.

4. The thermal sensor of claim 3, wherein said reference oscillator circuit further comprises, a voltage regulator to regulate an output value of the temperature independent voltage source.

5. The thermal sensor of claim 2, wherein said temperature dependent oscillator circuit comprises,

a temperature dependent voltage source; and

a voltage controlled oscillator (VCO), wherein said VCO generates said second oscillating signal based on a temperature dependent voltage value asserted by said temperature dependent voltage source.

6. The thermal sensor of claim 5, wherein said temperature dependent oscillator circuit further comprises, a voltage regulator to regulate an output value of the temperature dependent voltage source.

7. The thermal sensor of claim 3, wherein said temperature independent voltage source comprises, a bandgap reference circuit.

8. The thermal sensor of claim 5, wherein said temperature dependent voltage source comprises, a bandgap reference circuit.

9. The thermal sensor of claim 1, wherein, a selected counter circuit of said one or more counter circuits comprises,

a first counter circuit to perform said first count on said first oscillating signal, wherein said first counter circuit asserts an output signal when said first count reaches said predetermined value; and

a second counter circuit to perform said second count on said second oscillating signal, wherein upon assertion of said output signal by said first counter circuit said second counter circuit halts said second count and asserts said value of said halted second count to indicate said response of said thermal sensor.

10. The thermal sensor of claim 9, wherein said first counter circuit comprises,

a counter register to hold said first count value of said first oscillating signal; and

an incrementer circuit to increment said first count value of said first oscillating signal held by said counter register by one for an incrementing event detected by said first counter circuit.

11. The thermal sensor of claim 9, wherein said second counter circuit comprises,

a counter register to hold said second count value of said second oscillating signal; and

an incrementer circuit to increment said second count value of said second oscillating signal held by said counter register by one for each incrementing event detected by said second counter circuit.

12. The thermal sensor of claim 9, wherein said selected counter circuit further comprises,

a first synchronizer circuit to synchronize an edge of said output signal of said first counter circuit with an edge of said second oscillating signal in order to assert a first control signal to halt said second count of said second oscillating signal by said second counter circuit;

a second synchronizer circuit to synchronize an edge of said first control signal with an edge of a first clock signal to assert a second control signal; and

a shift register to receive in parallel said second count value held by said counter register upon receipt of said second control signal, wherein said shift register serially shifts said second count value to an output node to assert said temperature detected by said thermal sensor.

13. The thermal sensor of claim 12, wherein said first synchronizer circuit further comprises, a detector circuit to detect an edge of said first control signal to assert a reset signal to said counter register of said second counter circuit to reset said counter register of said second counter circuit.

14. The thermal sensor of claim 12, wherein said second synchronizer circuit further comprises,

a clock divider circuit to reduce a frequency value of a second clock signal to generate said first clock signal; and

a detector circuit to detect an edge of said second control signal to enable said shift register to receive in parallel said second count value held by said counter register.

15. The thermal sensor of claim 2, wherein said reference oscillator generates said first oscillating signal with a first frequency value.

16. The thermal sensor of claim 2, wherein said temperature dependent oscillator generates said second oscillating signal with a second frequency value.

17. In an integrated circuit having a thermal sensor, a method for said thermal sensor to sense a die temperature of said integrated circuit, said method comprising the steps of:

generating a first oscillating signal and a second oscillating signal;

performing a count on said first oscillating signal and said second oscillating signal; and

asserting said count on said second oscillating signal when said count on said first oscillating signal reaches a desired value, wherein said count for said second oscillating signal indicates said die temperature of said integrated circuit as sensed by said thermal sensor.

18. The method of claim 17, further comprising the steps of,

synchronizing an edge of an output signal of a first counter circuit performing said count on said first oscillating signal to an edge of said second oscillating signal to produce a first trigger signal that indicates said first counter circuit reached said desired value; and

synchronizing an edge of said first trigger signal with an edge of a first clock signal to produce a second trigger signal that allows said count on said second oscillating signal to be loaded into a serial shift register, wherein said

serial shift register performs said assertion of said count on said second oscillating signal to an output node.

19. The method of claim 18, further comprising the steps of, detecting an edge of said first trigger signal to issue a reset signal to a second counter performing said count on said second oscillating signal, wherein said reset signal triggers a reset of a register holding said count on said second oscillating signal.

20. The method of claim 18, further comprising the step of,

detecting an edge of said second trigger signal to load enable said serial shift register.

21. The method of claim 18, further comprising the step of, dividing a second clock signal to produce said first clock signal, wherein said first clock signal has a lower frequency value than said second clock signal.

22. The method of claim 17, wherein said integrated circuit comprises a very large scale integration (VLSI) circuit.

23. The method of claim 17, wherein said integrated circuit comprises a microprocessor.

24. The method of claim 18, wherein said second count on said second oscillating signal is loaded in parallel into said serial shift register.

25. A thermal sensor embedded in an integrated circuit that asserts a die temperature value, said thermal sensor comprising:

a sensor circuit to generate an oscillating reference signal and a temperature dependent signal, wherein said oscillating reference signal is substantially temperature independent; and

a converter circuit that converts said oscillating reference signal and said temperature dependent oscillating signal into said die temperature value.

26. The thermal sensor of claim 25, wherein said sensor circuit drives a first voltage controlled oscillator (VCO) with a temperature independent voltage signal to generate said oscillating reference signal.

27. The thermal sensor of claim 25, wherein said sensor circuit drives a second voltage controlled oscillator (VCO) with a temperature dependent voltage signal to generate said temperature dependent oscillating signal.

28. The thermal sensor of claim 25, wherein said converter circuit performs a first count on said oscillating reference signal and a second count on said temperature dependent oscillating signal until said first count for said oscillating reference signal reaches a selected value, whereupon a control signal is asserted to stop said second count on said temperature dependent oscillating signal and assert a current second count of said temperature dependent oscillating signal to indicate said die temperature value.

29. The thermal sensor of claim 28, wherein said converter circuit performs said first count on said oscillating reference signal and said second count on said temperature dependent oscillating signal based on an edge transition of said oscillating reference signal and an edge transition of said temperature dependent oscillating signal.

30. The thermal sensor of claim 28, wherein said converter circuit synchronizes an output signal of a first counter register holding said first count of said oscillating reference signal with said temperature dependent oscillating signal to assert said control signal.

31. The thermal sensor of claim 28, wherein said converter circuit synchronizes said control signal with a clock signal derived from a system clock signal to assert an enable signal to enable assertion of said current second count of said temperature dependent oscillating signal from a second counter register to a serial shift register, wherein said serial shift register asserts said die temperature value to an output node of the thermal sensor.